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ABSTRACT

Drill and practice, tutorial, dialogue, and text analysis programs represent the major uses of computers to date in the field of English composition. Drill and practice programs are convenient to use and inexpensive. However, they are usually geared to the low level achiever. Tutorial programs tailor their presentations to students' responses, anticipating incorrect responses and providing immediate help to those who need it. However, tutorials are mainly a tool for remediation. Dialogue programs can guide students through the prewriting process; however, they respond identically to anything a student answers, making their usefulness limited. Word processing constitutes the most important function of the microcomputer available today, allowing students to actively compose and manipulate text using a keyboard and a few simple commands. This freedom can relieve writing apprehension and develop fluency, though some feel that it seduces students into taking the task of writing too lightly. Finally, text analysis programs, such as spelling checks, allow students to concentrate on style rather than on mechanics and lighten the time-consuming task of grading for teachers. However, limited databases make many of these programs unreliable and some feel that students rely too heavily on these checks. A 41-item reference list is included. (JD)

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Using Computers to Teach
English Composition Classes

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Running Head: USING COMPUTERS

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ABSTRACT

Microcomputers are rapidly becoming a part of college composition classes. This article reviews the advantages and disadvantages of the following types of programs: drill and practice, tutorial, dialogue, word processing, and text analysis. It also considers the problems of faculty resistance to and cost of computer-assisted instruction.

Using Computers to Teach English Composition Classes

In the past ten years a major change has come about in the teaching of English composition. According to Withey (1983), English instructors are slowly abandoning the teaching of grammar as writing and the pre-teaching of carefully constructed outlines as essential to prewriting. "Know what you are going to say before you say it" is giving way to "find out what you believe while you are writing about it" (p. 24). The emphasis in writing has shifted from product to process.

Schwartz (1984) compares the act of writing to "producing a symphony, with different parts cooperating to produce an overall effect" (p. 240). However, as Selfe and Wahlstrom (1983) point out, this increased awareness of process has resulted in an increased workload for teachers since "it takes much longer to work with a student through lengthy prewriting activities and multiple drafts of a paper than it does to simply examine a written product in its final form" (p. 183).

Fortunately some of this workload may be reduced by another change in the way composition is taught, for with the introduction of Apple's microcomputer in 1977 computers began to come into the classroom-sometimes even the English class (Wresch, 1982). As Turner (1983) states more and more students and teachers are discovering that the computer is "the single greatest boon to writing, rewriting, and editing since the blue pencil. It enables a writer to insert, move, or delete words, sentences, and paragraphs with just a few keystrokes" (p. 15). Schwartz (1984) believes that computer-assisted instruction can help students simplify the tasks involved in the writing process by systematically prompting them to consider their thesis, audience, purpose, and what material is important

for developing ideas. Rodrigues (1985) states that the computer enabled her to teach writing as a process by allowing her students to "slow down, concentrate, and tackle tasks one at a time" (p. 338).

Drill and Practice Programs

However, when computers were first introduced into the English classroom, they were not used by students in the actual writing of an essay. Traditionally, computers have been perceived as advantageous in teaching situations where learning objectives are precisely defined and have specific outcomes. As a result, early programs focused on teaching basic concepts and skills (Wall, 1982). These "drill and practice" programs covered areas of grammar, syntax, and mechanics. A recent directory of software lists over 250 programs which provide practice in these areas and constitute 80% of all language arts writing software (Chambers, 1985).

Although these programs are relatively easy to write, inexpensive to buy, and convenient to use, they are usually geared to the low-level achiever whose writing is hampered by problems in correctness and clarity. Many of these students speak some sort of nonstandard dialect of English-such as black English-and are often members of various ethnic groups (Southwell, 1983). As Wilson (1986) points out many of these low-level achievers come into college with no knowledge of grammar or punctuation and are ill-equipped to enter the first writing course. Because they "don't know they don't know," after repeated classroom drills they give the impression that they understand the material, then get 20-30% on the test. Kiser (1986) believes that these grammar review classes can be taken out of the classroom and taught exclusively by a series of drill

and practice programs. According to Shuman (1985), this method will relieve students of the embarrassment of not learning something as quickly as their peers: "the microcomputer will go over the material again and again, adapting the level of difficulty to the individual" (p. 38).

These programs usually present one or two sentences of information (called "frames") on the computer's monitor and then ask the student a question. The student answers the question and is immediately told whether the answer is right or wrong. Then the program displays the next frame of information on the screen and asks the next question (Wresch, 1982).

Because these programs are used in remediation and are therefore not needed by all college students, they are most commonly used as a supplement to coursework and are usually available in writing labs or learning/tutoring centers. English teachers send students with particular grammatical problems to the center, where they work on their own. Southwell (1983) believes that computer-assisted instruction is particularly well suited to this kind of drop-in service since it enables students to work in privacy, at their own pace, and at times convenient to them. He feels that students like the game-like qualities of these CAI lessons and, because the computer is always patient and impersonal, students are more receptive to its responses than they are to those of their teachers. Oates (1981) believes that since there is little time for grammar review in college classes where higher-level compositional concerns should be addressed, CAI provides a way to enrich students' learning experiences in a fundamental and important way.

Not everyone looks at drill and practice programs so favorably. Chambers (1985) feels that most of them become very tedious, and after a

while the novelty disappears. There is also no clear evidence that they have any significant impact upon the quality of student writing. The Educational Testing Service monitored the use of Plato (a set of drill and practice programs in five disciplines) in five community colleges in Illinois. Four thousand students per semester used Plato programs as part of courses in accounting, biology, chemistry, English, and mathematics. At the end of each semester when students who used Plato were compared to students who did not, the ETS found that "the Plato system had no consistent impact on either attrition or achievement" (Wresch, 1982, p. 485).

However, ETS reported that students liked using Plato; it did them no harm; and as long as equivalent achievement can be maintained and the colleges can afford the equipment, students might as well use drill and practice programs. Southwell (1983) believes that these programs should be used because they free English instructors from teaching grammar and allow them to spend their limited time on the more complex task of teaching composition strategies.

Tutorial Programs

Because he realized that computers can do more, Atkinson moved from drill and practice CAI to "tutorial" CAI (Wresch, 1982). The major difference between the two is that drill and practice programs work in a linear fashion and are designed primarily to review information that has already been presented, while tutorial programs take advantage of branching (the if-then structure of computer programs) to tailor their presentations to students' responses (Leibowicz, 1986). Where drill and practice goes from one frame to the next, whether the student knows the material or not, tutorial CAI moves from one frame to another depending upon how the student

has performed on previous frames. If a student responds correctly to a series of questions, the program can branch to a more advanced series of frames; if the student responds incorrectly to a series of frames, the tutorial can branch to frames that explain the concepts that the student is having trouble with (Wresch, 1982). These programs are more flexible because they anticipate incorrect responses and provide immediate help only to those who need it. Because their goal is to gear exercises to the particular needs of each student, they represent a major improvement over the linear drill and practice software (Chambers, 1985). Schwartz (1982b) believes that while drill and practice can teach a student skills, a good tutorial program can "help him or her internalize a process of learning" (p. 146).

However, tutorials also have their limitations. Chambers (1985) believes them to be superior to drill and practice programs, but states that they "are not applicable to higher order thinking functions involving analysis, synthesizing, or artistic creativity" (p. 4). Like drill and practice, tutorial CAI is mainly a tool for remediation and is not used in essay writing.

These programs are also difficult to write. While drill and practice has a single sequence of questions or exercises, tutorial programs require the maintenance and searching of a memory for each student, a branching mechanism, and many series of frames on many levels of difficulty. To write such a program, one must have a high level of programming ability and huge amounts of knowledge about the English language (Wresch, 1982).

Dialogue Programs

An outgrowth of the tutorial, and one that can be used by most

students in the prewriting stage of composition, is the "dialogue" program which can sometimes serve as a substitute for the instructor. Owens (1984) points out the role of the teacher in the traditional writing classroom:

Writing as process concerns itself with the flow and unfolding of the writing event, and for this reason, the teacher intervenes more frequently and attempts to probe, ask questions, and suggest strategies that stimulate a student's invention and lend it direction. This interactive teaching process is based on studies of the writing heuristics (structural probes and questions) that experienced and skilled writers use. The role of the teacher is not so much to tell a student how or what to write but to suggest directions and to offer maps, pointers, cues. In this sense, the writing teacher is like a coach--a helper restricted to the sidelines. (p. 128)

However, Rodrigues (1984) feels that most composition instructors usually devote only a few classes to explaining how prewriting strategies work, occasionally running students through simple invention exercises and possibly reviewing an heuristic by giving students appropriate questions. Because students must frequently work at pre-writing activities on their own, they often eliminate this step and plunge directly into a first draft. Dialogue programs--"talking" tutorials that ask questions of students and require some sort of response to answers--can be helpful in guiding students through the prewriting process without the assistance of an instructor. These programs ask the student to state a topic, and then the computer asks certain questions. Dialogue programs contain millions of branching possibilities in their pool of questions and responses, and there

are no right or wrong answers (Withey, 1983). These programs can model for writers question/answer heuristics for brainstorming ideas, limiting a topic, or analyzing an intended audience (Wilcox & Hansen, 1986), and they can also provide "patient and time prompting of the student while the problem-solving task is underway" (Covey & Southwell, 1983, p. 141).

One of the earliest and most popular of these programs was developed by Major Hugh Burns with the assistance of George Culp in order to help students "articulate, refine, and preserve their ideas" (Burns & Culp, 1980, p. 5). Burns' programs provide a methodical presentation of heuristic devices which help focus on what the student already knows and needs to know before proceeding with the paper (Chambers, 1985). Another popular dialogue, "SEEN," written by Helen Schwartz, enables students to consider and write about literary works. Schwartz (1982a) found that students who used this program wrote longer, more detailed, and, in some cases, better-quality essays than those who did not.

As with drill and practice and tutorials, not all comments about dialogue programs have been favorable. Chambers levels this criticism toward dialogues:

Each program's manner is unfailingly friendly and encouraging (an oft-claimed advantage over human teachers) but is entirely arbitrary in the sense that it responds identically to anything a student answers. For example, the program may prompt for facts supporting a thesis statement, but will respond warmly whether the student types a brilliant answer or gibberish. It takes more than a little hyperbole to call an exchange a dialogue when one side has already decided exactly what it is going to say before the other side sits down to talk. (p. 5)

Wilcox and Hansen (1986) also don't like the fixed text of dialogues because one teacher's idea of ten questions that help writers begin a paper may not be another teacher's idea of ten such questions. Moreover, the questions must be very general so as to be relevant to the largest number of writing topics. They warn that teachers who use dialogues should caution students that they are the final authorities of their own work especially in matters of style.

Most authorities agree that dialogues do represent an effort to encourage higher-order learning functions during both the pre-writing and composing stages of the writing process and therefore represent growth over earlier applications. Wresch (1983) believes that although students still have to do a great deal of revision, dialogues provide them with ideas which can be used to begin the essay. He states that college freshmen particularly enjoy these programs, especially when used jointly by three or four students who help each other answer questions and "share the surprise of seeing what form the finished product takes" (p. 65).

Word Processing Programs

The most important function of the microcomputer for English teachers is probably that of word processing because it adds great flexibility to the act of writing. A word processor has a keyboard which is very similar to that of a typewriter, but the text shows up on the screen and is stored in the computer. A word processing program enters text into the computer as the writer types on the keyboard and views the text on a visual display. The writer can insert, delete, or move any section by giving the computer a few simple commands rather than by recopying. Each version of the text is stored in the computer memory and, at any time, the writer can have a

neatly typed copy on paper (Daiute, 1983). Chambers (1985) points out that although word processing is the most frequently used computer application in writing and is the area with the most sophisticated hardware and software, instructional applications have lagged because the sophistication and complexity of word processing technology has retarded its use in school settings. However, the introduction in 1983 of Bank Street Writer, WANDAH and other simplified word processing packages has brought about the beginnings of a "genuine revolution in the teaching of writing" (p. 7).

In order to use the word processor, students must be taught to use the basic commands of the program, a task that Daiute (1983) says can take anywhere from a few hours to a few days. In order to save time, Rodrigues (1985) developed a syllabus which allowed her to help students learn basic keyboard commands and writing skills simultaneously. For example, she showed students how to use the insert key while they were drafting their first essay, a narrative, by asking them to find a place where they could insert more details. She later asked them to find a digression or unnecessary detail in the narrative and use the delete key to remove it. With each subsequent assignment, she continued to present additional word processing techniques which would aid students in writing and revising.

Once the students master the commands, Moran (1983) believes they will find word processing a valuable tool which can help alleviate the anxiety that most writers have. Because there is a feeling of impermanence on the screen, "the editor retires to the sidelines, allowing the creator to produce language, both good and bad. The editor is recalled later, at the appropriate time, to cut, paste, add, delete" (p. 113).

Teachers can keep better records of a student's progress because every

essay can be stored for future reference easily, immediately, and without any paper shuffling; and it can be just as easily recalled for display or printing. The instructor can also place suggestions or corrections on any student's writing, or can have specific grammar rules preset for an entire class when a problem such as split infinitives starts to crop up in more than a few places (Bencivenga, 1982).

Marcus (1983) conducted an experiment using word processors "free-writing," a prewriting technique which develops fluency and is advocated by many experts as an appropriate tool in the composing process:

Simply by adjusting the brightness knobs on their monitors, students can eliminate immediate visual feedback yet still record their ideas. The text may eventually be examined by brightening the screen display, and as usual, it is available for editing, saving, and printing. Students commonly reported that when they wrote under ordinary circumstances, they usually would allow their minds to wander; rarely did they focus their attention undeviatingly on a single train of thought for more than one or two sentences. In addition, students noted that their usual pattern in composing was to interrupt the flow of thought frequently to edit and amend the language, syntax, and mechanics of their text. Invisible writing experiments suggested to them that their usual pauses obstruct their fluency and, more importantly, dilute their concentration. (p. 156)

Once the students have engaged in freewriting, they are able to take their ideas and turn them into essays through extensive revision. Cronnell and Humes (1981) state that considerable research has indicated that

revision is one of the most important parts of the composing process, but that students don't receive much instruction on this part of the process. Therefore, they don't do much revision because it is too much work-a tedious, time-consuming and often unrewarding task. Schwartz (1984) points out that on a word processor where words, sentences, and paragraphs can be moved around easily "writing becomes a playground where revising is part of the fun instead of part of the punishment" (p. 240).

Rodrigues (1985) found that students work with each other in a more cooperative manner when they use the word processor during the revision process: "Working in pairs or twos in front of the computer strengthened the bonds among students and encouraged more willing collaboration during revision sessions than I typically see with basic writers" (p. 338). Schwartz (1984) also believes that putting compositions on disks encourages peer group editing because it "changes the process fundamentally and makes writers better readers of their own work and therefore more willing revisers of other readers" (p. 240).

Daiute (1983) believes that writers who use a word processor take more risks because their writing can be easily revised:

The physical ease of revising encourages writers to experiment and to view their writing as dynamic. The "delete" command makes getting rid of awkward or unrelated sentences a joy. "Undelete" and backup copies assure writers that they will be able to retrieve any hastily or mistakenly deleted words. In addition writers can focus on one type of revision at a time. They can revise one time for content, a second time for organization, a third time for transitions, a fourth for sentence structure, a fifth for spelling, and so on. (p. 137)

Although to date no conclusive evidence exists proving that word processing results in improved writing in any quantifiable sense (Chambers, 1985), many instructors have witnessed progress by using them with their own classes. Collier (1983) states that his students made two-thirds more substitutions, engaged in twice as much reordering, and increased the length of their essays. Monahan (1982), who worked with students doing handwritten, typed, and word processed papers, found that students "may make more revisions and make them at a higher level when using a word processor" (p. 94). After using word processing in a two-year experiment at North Country Community College, students' compositional qualities improved. Their sentences became sharper; their spelling errors decreased; and the organizational pattern of their essays became more controlled (Levin & Doyle, 1983). Shuman (1985) noticed that students with fluency problems often overcame them quickly and substantially with the word processor. Rodrigues (1985) believes that her basic writing students have benefitted in special ways from producing and revising their texts onscreen: "They gained confidence and independence as writers, and--most important--they began to enjoy writing" (p. 336).

Bleau (1986) believes that "the filing, revision, editing, and text manipulation of the word processor are the greatest boon to writing--and, by extension, to the English classroom--since Gutenberg's little invention" (p. 22). Harris (1985), however, warns that English teachers may have become too uncritical in their assessment of word processing since few existing studies provide useful information on its effects upon composition. Wilcox and Hansen (1986) feel that many writers find their ability to make their writing look professional to be very seductive: "the

most intellectually impoverished essay looks just as good as one with meaningful content . . . [they] fuss with every word and correct every trivial misspelling or mechanical error as they go along, gradually losing sight of the overall structure of their text" (p. 124).

Overall, however, most instructors realize that while word processing does not teach writing, it does enable students to be more "active, effective, and enthusiastic collaborators in their writing and revising" (Sudol, 1985, p. 335). As Shuman (1985) has concluded, the word processor will not turn a bad writer into a Nobel prize laureate, but it will remove many of the stumbling blocks that most students encounter when they write.

Text Analysis Programs

Once the student has completed the composition, it is up to the instructor to grade it. This can be a burdensome task, especially in some community colleges where teachers may have four composition classes with thirty students in each class. Even for an experienced teacher, a minimum of fifteen minutes per paper would be required to adequately grade an essay (Daigon, 1966). Therefore, efforts to lighten the workload by using computers to grade compositions date back to the early 1960s and have reappeared off and on since then. The hope was that programs could be written which could take the place of an instructor in assessing the quality of a student's writing (Chambers, 1985).

Some of the most successful text editing programs that have been developed are those which check for spelling errors. Schwartz (1984) believes that these spelling checks provide psychological benefits for many students by allowing them to relax and concentrate on generating ideas. Dictionaries of 40,000 to 50,000 words are now available for nearly all

microcomputers, and these programs will check every word in a written piece against their wordlists. One may add words (such as proper names and specific terminology) to the wordlist as the need arises (Shuman, 1985). Fluegelman and Hughes (1983) point out that a dictionary program can help improve writing in two ways: first it catches typos; and second it helps writers to be more fluent because they don't have to stop and consult a dictionary every few minutes. The only drawback to the spelling checkers is that they may not catch some misspellings: for example, if a student writes "short stores" for "short stories," the spelling checker won't catch the error since "stores" is a correctly spelled word (Kiser, 1986).

The new view of computerized text analysis is in consideration of style, rather than mechanics. Several revision and editing programs are available which will "read" a student's paper and provide feedback on sentence type, sexist language, paragraph structure, wordiness, cliches, use of passive voice, sentence length, etc. These programs can process a paper in less time than it takes a teacher to read a sentence (Marcus, 1983). One program even goes a step further by using a semantic dictionary which determines the emotional power of word choices (Chambers, 1985). Daiute (1983) believes these programs are advantageous because the interactiveness of the text editor "stimulates writers to take a reader's point of view and thus evaluate their writing and find their own mistakes" (p. 134). Shuman (1985) sees the programs as beneficial to teachers since they can indicate the writing patterns and types of errors that are prevalent in a class of students.

However, Wilcox and Hansen (1986) criticize the programs because they have limited data bases and will flag mistakes that really aren't mistakes

at all. They also believe that these programs are incapable of dealing appropriately with novel situations:

A living, sentient teacher will always have to back up the machine to affirm the value of a thoughtful and unique student response to a program . . . So called "style checkers" are sublimely oblivious to anything like real "style." If a series of electronic dots and dashes runs too long without that particular sequence appearing which indicates a period, the computer can flag this and alert the user. That the author is Samuel Johnson or Winston Churchill, and that, in fact, the sentence is perfectly lucid, intelligible, or even positively grand, the computer neither knows nor cares. What it could tell you is that Faulkner has problems with punctuation, that Sterne uses too many dashes, and that Hemingway might benefit from sentence-combining exercises. (p. 127)

Daigon (1966) disputes this type of criticism believing that "'creativity' is right now suffering monumental abuse at the hands of those overburdened or untalented teachers who merely scan a paper, assign a number or letter grade, and write an innocuous comment or two" (p. 54). Because he feels that most teachers do little to promote creativity, he feels that the computer can do no worse.

Even though these programs aren't perfect, even if they are only used to check a paper's mechanical errors, they would make grading an essay less time-consuming and enable the instructor to devote more time to content, organization, and style. Chambers (1985) predicts that computer analysis of writing will continue to grow more sophisticated, while Moran (1983)

believes that in the future students will come to rely upon the text analysis programs to correct spelling and punctuation just as they now rely upon their hand-held calculators to perform routine mathematical functions.

These four applications--drill and practice, tutorials, dialogues, and text analysis--represent the the major uses of computers to date in the field of English composition. As Chambers (1985) points out, "that no one of these applications has yet been developed to its full potential, nor been proven to facilitate writing excellence, only illustrates the potential for research and development in the field" (p. 8).

Faculty Resistance to CAI

Although English instructors are becoming more aware of the advantages of computer-assisted instruction, many are still resisting using these machines as teaching aids. Roth (1986) categorizes these resistors as "the busy, the uninterested, and the computerphobic" (p. 20). Some believe that the role of the teacher is to be concerned about the personal development of each individual student and they therefore oppose a computerized system where "all students must respond identically to anything" (Dieterich, 1972, p. 1389). Owens (1984) states another criticism that has been leveled against computers in the English classroom: "Computers can't really think, evaluate original ideas, or react emotionally to beauty, sadness, or inspiration. In short, they don't possess the qualities admired in good writing teachers" (p. 128).

Nold (1975), however, believes that instead of rejecting technology, humanists should "grasp the opportunity to make it multiply the good and the wondrous in man" (p. 269). Schwartz (1985), a program writer and English professor, describes how she uses CAI in her classes: "I use

computers to teach a writer how to interact with her world, her audience, her text, but I design computer applications and integrate them into the class by consciously judging them to preserve freedom, honesty, humanity, and playfulness" (p. 223).

Cronnell and Humes (1981) state that many people reason that you can't mix a humanistic activity like writing with a machine like a computer but that just as the typewriter, and later the electric typewriter, were tools that helped in writing, so too is the computer a helpful tool. Nold (1975) points out that while a computer cannot substitute for a teacher, just as a book, film or videotape cannot, a good teacher can and will use available resources, and the computer is one such resource.

Some English faculty believe that business teachers should be the ones to teach students how to use computers and do word processing. Rodrigues (1985) disagrees with this belief because she feels that English teachers are best qualified to present word-processing strategies which help students learn how to compose and revise: "Typists enter text-writers create it . . . without an English teacher's guidance . . . [students] tend to use the word processor as little more than a specially-equipped typewriter, not as an aid to inventing, drafting, and revising" (p. 336). Wilson (1981) also thinks the English teacher should be involved in teaching students to use computers: "A computer-literate individual is in the habit of thinking analytically and welcomes the opportunity to solve problems . . . It is the English teacher, more than any other, who is already well-qualified to provide the necessary skills to build that habit of thought and to give direction to its applications" (p. 52).

Bourque (1983) feels that English instructors will be more willing to

use computers if English departments promote their facilities' computer literacy by giving rewards and value to the work professors do with computers (i.e. count the writing of new programs as publications). He states that since computers are an inevitable part of the future, English departments must encourage faculty to work with them and to develop programs that will strengthen the English programs taught in college.

Schwartz (1982a) doesn't think that computers can ever replace teachers, but feels that in certain situations and for certain students, they can be patient and understanding aides which help free the instructor's time for more creative tasks. Wilcox and Hansen (1986) also see the microcomputer as a useful adjunct to the teacher of writing:

The student of writing will always require someone who can react to her brave attempts at English prose as a standard reader.

Once, however, the microcomputer is recognized not as a panacea but as one more useful tool, we can intelligently adapt it to a writing instruction as the powerful, flexible, and plain old entertaining tool that it is. (p. 127)

However, as Shuman (1985) points out, only when English faculty develop a clear notion of the uses of computers and become convinced that using these machines is within their capability will they start to develop the confidence to make microcomputers an integral part of their normal teaching routine.

Cost of CAI

Although the costs are coming down, computers are still expensive. Bencivenga (1982) states that a classroom writing lab of twenty sets with a teacher display could be purchased and installed for a cost comparable to

the equipping of a chemistry or physics lab. Turner (1983) points out that many colleges and universities have had to limit their students' use of central computers for word processing to reserve the machines for applications considered more "serious" (p. 15). Although a few institutions give each entering student a microcomputer, many universities still have large, central computers. The limitations that colleges have adopted reflect "computer-age tensions between those in mathematical and scientific disciplines--the traditional computer users--and those in the humanities" (Turner, p. 15).

However, since more computers are used for word processing than for any other purpose and because the role of the computer as a valued educational tool is growing, Barker (1986) believes that funds for microcomputer labs in English are becoming increasingly easier to acquire. Another factor that will enable students to have access to computers is that as the cost of small computers come down, it is more tenable for individuals to buy the machines themselves. As Princeton's James Poage points out, "If we don't get the computer resources, the kids will" (Turner, 1983, p. 16).

Conclusion

Although there are the problems of cost and teacher resistance and although there is no conclusive data that proves CAI actually improves student writing, computer-assisted instruction will probably be incorporated into more and more college and university English programs in the coming years because it is beneficial to both students and faculty. CAI provides a support system for developmental students, and computers are available to students at times and places when teachers are not. Not only

does CAI instruction require active involvement in the learning process, but the novelty of working with a computer contributes to a positive attitude in many students. Teachers benefit from CAI because it allows them to individualize instruction, and it can relieve them of such time-consuming tasks as teaching grammar review exercises and correcting spelling and punctuation errors in finished compositions. As Daiute (1983) states, everyone can benefit from using computers in the writing process: "Writers can use computers to do drudge work. They can hand over to the computer some tasks like storing lots of information, correcting spelling, recopying, and reformatting the text. As writers let the computers do such work, they free themselves for thinking" (p. 144).

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